

CLAIMS

What is claimed is:

1. A voltage supply device for developing devices of a color image forming apparatus, the voltage supply device comprising:
 - a printed circuit board (PCB) connected with a high voltage supply source;
 - a plurality of fixed contact point terminals provided at one end of the respective color developing devices; and
 - a plurality of voltage changeover units for selectively connecting the PCB and the fixed contact point terminals to selectively supply the voltage from the high voltage supply source to the respective color developing devices.
2. The voltage supply device of claim 1, further comprising a PCB input terminal and a PCB output terminal, which are provided at the PCB.
3. The voltage supply device of claim 2, further comprising a terminal connecting part between the PCB output terminal and the fixed contact point terminals, and the terminal connecting part supplies a power to a plurality of different elements of the developing devices.
4. The voltage supply device of claim 3, wherein the terminal connecting part is comprised of a spring terminal of a predetermined flexibility.
5. The voltage supply device of claim 2, wherein the respective voltage changeover units apply high voltage to the respective color developing devices by selectively contacting the PCB output terminal and the PCB input terminal.
6. The voltage supply device of claim 1, wherein the high voltage supply source is comprised of a single voltage supply having a developing roller voltage unit, a developer feed roller voltage unit and a developer layer thickness restricting blade voltage unit.
7. A voltage supply device for developing devices of a color image forming apparatus, the voltage supply device comprising:
 - a printed circuit board (PCB) connected with a high voltage supply source;

a plurality of PCB input terminals and a plurality of PCB output terminals provided at the PCB;

a plurality of fixed contact point terminals provided to one end of the color developing devices;

a plurality of terminal connecting parts connecting the PCB output terminals and the fixed contact point terminals; and

a plurality of voltage changeover units comprised of a relay part which selectively applies voltage to the PCB output terminals to selectively supply the voltage from the high voltage supply source to the respective color developing devices.

8. The voltage supply device of claim 7, wherein the relay part comprises:
a supporting member provided at the PCB;
an electromagnet fixed to the supporting member and magnetized by an electric current;
an armature pivotally movable so as to pivot with respect to the supporting member to contact with or spaced apart from the electromagnet according to a magnetic force of the electromagnet during the operation of the electromagnet; and
at least a pair of relay input terminal and relay output terminal arranged on a voltage supply path of the PCB, in an opposite position with each other at a predetermined distance, the relay input terminal and the relay output terminal being contacted with, or spaced apart from each other according to contact and non-contact of the armature with the electromagnet so as to switch the power supply accordingly.

9. The voltage supply device of claim 8, wherein the armature is formed as a metal plate member in letter 'L' shape, which comprises a first end for being contacted with, or spaced apart from the electromagnet by the magnetic force of the electromagnet during the operation of the electromagnet, and a second end for contacting the relay input terminal with the relay output terminal when the first end contacts with the electromagnet.

10. The voltage supply device of claim 9, wherein the armature further comprises an extendibly-moving member which is arranged between one among the relay input terminal and the relay output terminal on the one hand, and the second end of the armature on the other hand, to move with respect to the supporting member and assist the second end to connect the relay input terminal and the relay output terminal when the first end contacts with the electromagnet.

11. The voltage supply device of claim 10, wherein the extendibly-moving member comprises a non-conductive plate member in the shape of letter 'T' which is secured with a lower end to one among the relay input terminal and the relay output terminal through a receiving hole defined in the supporting member.

12. The voltage supply device of claim 11, wherein the relay input terminal and the relay output terminal each comprises a plate spring having a conductivity and is secured to the PCB through the supporting member, and a contact point formed at an end of the plate spring.

13. The voltage supply device of claim 12, wherein the terminal connecting part comprises a spring to absorb shock.

14. The voltage supply device of claim 7, wherein at least one of the terminal connecting parts, which corresponds to the developing devices, supply power to a plurality of different elements of the developing devices.

15. A voltage supply device for developing devices of a color image forming apparatus, the voltage supply device comprising:

a printed circuit board (PCB) connected with a high voltage supply source;

a plurality of PCB input terminals and a plurality of PCB output terminals provided at the PCB;

a plurality of fixed contact point terminals provided to one end of the color developing devices;

a plurality of terminal connecting parts connecting the PCB output terminals and the fixed contact point terminals; and

a plurality of voltage changeover units comprised of a solenoid part which selectively applies voltage to the PCB output terminals to selectively supply the voltage from the high voltage supply source to the respective color developing devices.

16. The voltage supply device of claim 15, wherein the voltage changeover unit comprises:

a holder,

a contacting member having one side connected to the holder and the other side fixed to the PCB output terminals, and
a holder-moving unit for moving the holder toward and away from the PCB.

17. The voltage supply device of claim 16, wherein an upper portion of the contacting member being connected with the holder is formed into a hook-shaped ring, and a lower portion is fixed to the PCB.

18. The voltage supply device of claim 15, wherein the contacting member is a plate spring to absorb shock.

19. An image forming apparatus, comprising:
a photosensitive medium;
a plurality of color developing devices fixed a constant distance from the photosensitive medium and developing an electrostatic latent image on the photosensitive medium with respective color developers;
a printed circuit board (PCB) connected to a high voltage supply source;
a plurality of PCB input terminals and PCB output terminals provided at the PCB;
a plurality of fixed contact point terminals provided at an end of the respective color developing devices; and
a voltage connecting unit for selectively applying voltage to the PCB output terminals to selectively supply the voltage from the high voltage supply source to the respective color developing devices.